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Calendar

1913

June 11–July 23	Summer Term for Teachers.
June 18–August 28	Summer Law School.
September 3–6	*Wednesday to Saturday.* Examinations for Removal of Conditions.
September 8–10	*Monday to Wednesday.* Entrance Examinations. Registration.
September 11	*Thursday.* Lectures begin (Fall Term).
October 12	*Sunday.* University Day.
November 27	Thanksgiving Day.
December 19	*Friday.* Christmas Recess begins (1:30 P. M.)

1914

January 2–3	*Friday and Saturday.* Registration.
January 5	*Monday.* Lectures begin.
January 19–29	Mid-Year Examinations.
January 30	*Friday.* Lectures begin (Spring Term).
February 22	*Sunday.* Washington's Birthday.
May 2	*Saturday.* Selection of Commencement Orators.
May 19–29	Final Examinations.
May 31	*Sunday.* Baccalaureate Sermon. Sermon before the Y. M. C. A.
June 1	*Monday.* Senior Class Day. Inter-Society Banquet and Reunions.
June 2	*Tuesday.* Alumni Day. Meeting of the Board of Trustees. Inter-Society Debate.
June 3	*Wednesday.* Commencement Day. Summer Vacation begins.
September 2–5	*Wednesday to Saturday.* Examinations for Removal of Conditions.

The School of Medicine

FACULTY

Francis Preston Venable, Ph. D., D. Sc., LL. D., President.
Isaac Hall Manning, M. D., Dean.

Charles Staples Mangum, A. B., M. D., *Professor of Anatomy.*
Isaac Hall Manning, M. D., *Professor of Physiology.*
William DeBerniere MacNider, M. D., *Professor of Pharmacology.*
Wade Hampton Brown, B. S., M. D., *Professor of Pathology.*
Robert Baker Lawson, M. D., *Associate Professor of Anatomy.*
Louis deKeyser Belden, S. B., *Assistant in Physiological Chemistry.*
Grady Rudisill Roberts, *Assistant in Anatomy.*
Julian Nolley Tolar, *Assistant in Histology.*
James Steven Simmons, *Assistant in Histology.*
Adolphus Bart Greenwood, A. B., *Assistant in Pharmacology.*

Henry Van Peters Wilson, Ph. D., *Professor of Zoology.*
Edward Vernon Howell, A. B., Ph. G., *Professor of Pharmacy.*
Charles Holmes Herty, Ph. D., *Smith Professor of General and Industrial Chemistry.*
William Chambers Coker, Ph. D., *Professor of Botany.*
Andrew Henry Patterson, A. M., *Professor of Physics.*
Alvin Sawyer Wheeler, Ph. D., *Professor of Organic Chemistry.*
James Munsie Bell, Ph. D., *Associate Professor of Physical Chemistry.*
Charles Scott Venable, A. M., *Instructor in Chemistry.*
John Grover Beard, Ph. G., *Instructor in Pharmacy.*
Vivian Leroy Chrisler, A. M., *Instructor in Physics.*
Wesley Critz George, A. M., *Instructor in Zoology.*
William Battle Cobb, A. B., *Assistant in Botany.*
Paul Roby Bryan, *Assistant in Chemistry.*

Carnie Blake Carter, *Assistant in Chemistry.*
Frank Davies Conroy, *Assistant in Chemistry.*
Clarence Ballew Hoke, *Assistant in Chemistry.*
Jackson Townsend, *Assistant in Chemistry.*
James Blaine Scarborough, *Assistant in Physics.*
Allyn Raymond Brownson, *Assistant in Zoology.*

HISTORICAL SKETCH

The School of Medicine was established in 1879 and Dr. Thomas W. Harris was chosen to direct its work. A course of two years was offered in theoretical and practical medicine, but owing to the limited facilities this plan was not found practicable and was abandoned in 1886. In 1890, however, the School was re-opened and, under the direction of Dr. R. H. Whitehead, a course of one year, embracing only the elementary subjects—Anatomy, Chemistry, Physics, Physiology, etc. —was offered. As the requirements leading to the degree of Doctor of Medicine were increased by the leading medical colleges, the course was extended to embrace the first two years of the four year curriculum. In 1902 a Clinical Department was established at Raleigh, but since the funds for a proper equipment could not be provided, this was abandoned in 1909. In 1898 the School was admitted to membership in the Association of American Medical Colleges, and in 1901 was incorporated as an integral part of the University, on the same footing as the Graduate and the other professional schools.

COURSES OFFERED

The following courses are offered:

1. A Preparatory or Pre-medical Course: a course of one year of college work in which special attention is given to Chemistry, Physics, and Zoology. This is the minimum requirement for admission to the Medical School.
2. A Combined Course Leading to the Degree of Bachelor of Science: This consists of a prescribed college course of two years and the medical course of two years. On completing this four year course the School of Applied Science offers the degree of Bachelor of Science. The student is therefore able to obtain the

scientific degree and the degree of Doctor of Medicine in six years.

3. The Medical Course: The American Medical Association, the Association of American Medical Colleges, and other medical organizations recommend for the degree of Doctor of Medicine a graded course of four years in a medical school. They also suggest an arrangement of subjects in which the so-called laboratory subjects are to be given in the first two and the clinical subjects in the last two years. The medical course covers the subjects of the first two years. On completing the course a certificate is given which is accepted in full by most of the medical schools.

THE CURRICULUM

Preparatory or Premedical Course

English, 1, 3 hrs.
Zoology 1, 3 hrs.
Physics A, 3 hrs.
Chemistry 1, 3 hrs.
Chemistry 3A, 1½ hrs.
Chemistry 4A, 1 hr.

The Combined Course: College Studies

FIRST YEAR

English 1, 3 hrs.
Mathematics 1, 4 hrs.
Chemistry 1, 3 hrs.
Botany 1, 3 hrs.
Select one { German 1, 3 hrs. / French 1, 3 hrs. / Latin 1, 4 hrs.

SECOND YEAR

English 2, 3 hrs.
Physics 1, 3 hrs.
Zoology 1, 3 hrs.
Chemistry 3A, 1½ hrs.
Chemistry 4A, 1 hr.
Select one { German 1 or 2, 3 hrs. / French 1 or 2, 3 hrs. / Latin 1, 4 hrs. or 2, 3 hrs.
Select one { Drawing 1, 2 hrs. / History 1, 3 hrs.

In the College of Liberal Arts two hours of laboratory work are counted as one hour. In the premedical course and in the combined course this system is followed. In the medical curriculum two hours of laboratory work are counted as two hours.

The Medical Course

FIRST YEAR.

Organic Chemistry (Chem.10): *Six hours a week until April 1.*
Toxicology (Chem. 9): *Six hours a week from April 1 to the end of the term.*

Comparative Anatomy (Zoology 2A).—*Six hours a week, fall term.*

HUMAN ANATOMY.—*Ten hours a week, fall and spring terms.*

HISTOLOGY.—*Nine hours a week, fall term.*

EMBRYOLOGY.—*Six hours a week, spring term.*

PHARMACY.—*Six hours a week, spring term.*

SECOND YEAR.

HUMAN ANATOMY.—*Nine hours a week, fall term.*

NEURO-ANATOMY.—*Six hours a week, fall term.*

BACTERIOLOGY.—*Nine hours a week, fall term.*

PHYSIOLOGY.—*Five hours a week, fall term; ten hours a week, spring term.*

PHYSIOLOGICAL CHEMISTRY.—*Six hours a week, fall term.*

PATHOLOGY.—*Twelve hours a week, spring term.*

PHARMACOLOGY.—*Ten hours a week, spring term.*

MINOR SURGERY—Normal Physical Diagnosis.—*Four hours a week, spring term.*

SUMMARY OF FIRST AND SECOND YEARS.

Subjects	*Hours*
Chemistry	288
Anatomy	828
Physiology	255
Bacteriology	144
Pathology	200
Pharmacology	167
Pharmacy	90
Minor Surgery and Physical Diagnosis	60
Total	2032 hours.

ADMISSION

Candidates for admission and students already members of the School should present themselves to the President and Dean of the School for registration on *Monday, Tuesday* or *Wednesday, September 8, 9,* or *10, 1913,* and *Friday* or *Saturday, January 2,* or *3, 1914.*

ENTRANCE REQUIREMENTS

The requirements for admission to the premedical and the combined courses are the same as for the College of Liberal Arts.

The requirements for admission into the Medical School are the satisfactory completion of one year in the University or certificates of its equivalent from an approved college. Students may be admitted to the second year of the Medical course upon furnishing certificates of having completed the first year in an approved Medical school, or upon passing an examination upon the subjects studied in the first year. An examination will not be allowed until the candidate furnishes a certificate of having attended eighty per cent. of the hours required.

EXAMINATIONS

Regular examinations are held during the two regular examination periods of the College of Liberal Arts. Special examinations will be given for the purpose of making up deficiencies during Registration Week. A fee of $5.00 will be charged each applicant for an examination at any other time. An examination will not be allowed if the student is charged with ten per cent. of unexcused absences or with absences amounting to twenty per cent. of the total number of hours assigned to the subject.

CERTIFICATES

A certificate will be granted to those who complete the premedical and the medical courses. If a student fails on any one of the required subjects, a statement indicating the subjects completed will be given.

EXPENSES

The following are the charges a term payable at the beginning of each term in September and January respectively:

Tuition	$35.00
Fee for matriculation (registration, library, infirmary, etc.)	12.50
Total	$47.50

In addition the following fees will be charged for laboratory courses a term:

Physiological Chemistry, $5.00; Chemistry 10, $5.00; Zoology 1, $3.00; Zoology 2, $5.00; Experimental Physiology, $5.00;

Pharmacology, $5.00; Pharmacy, $5.00; Bacteriology, $2.50; Pathology, $2.50; for the use of the microscope, $1.00.

The laboratory fees are divided approximately equally among the four terms. The total charge is between $58.00 and $60.00 a term.

The following are the charges a term for students pursuing the premedical course:

Tuition	$30.00
Matriculation, etc.	12.50
Laboratories	5.00
Total	$47.50

Good board is furnished at Commons Hall for $10 a month and at the University Inn for $15 a month. The rent of unfurnished rooms in the dormitories ranges from seventy-five cents to $2.75 a month for each occupant. For each room a charge of $2.00 a month is made for electric light and heat.

PRIZES AND SCHOLARSHIPS

The Wood Scholarship. (Established in 1895.) Mrs. Mary Sprunt Wood, of Wilmington, has founded, in memory of her husband, the late Dr. Thomas Fanning Wood, a scholarship, covering the tuition and fees.

THE GENERAL PLAN OF INSTRUCTION

In the arrangement and conduct of the courses an effort is made to follow modern ideals in medical education. A year of college training in Chemistry, Physics, and Zoology is insisted upon as the minimum preparation for the study of medicine. In order, however, to encourage a more thorough preparation, the degree of Bachelor of Science is offered to those students who complete a prescribed college course of two years and the two years of the medical course. In offering this degree the value of a properly directed college course of four years is not minimized, but on the contrary is earnestly recommended.

In the arrangement of the course of studies the attempt is made to have the subjects follow in natural sequence. Elementary courses in General Chemistry, Physics, and Zoology having been completed in the pre-medical year, more advanced courses

in these subjects are pursued. In the first year Organic Chemistry, and Comparative Anatomy, with special reference to the requirements of the medical student, Gross Human Anatomy, Histology, Embryology, and an elementary course in Pharmacy are studied. In the second year Human Anatomy, Physiological Chemistry, and Bacteriology are completed in the first half; Materia Medica and Pharmacology, Pathology, and Normal Physical Diagnosis in the second half. Physiology is begun and completed in the second year. At the expiration of the two years the student will have completed the fundamental branches of medicine, and will be prepared to enter upon the study of the more practical subjects.

In the plan of instruction the laboratory method, supplemented with systematic lectures and demonstrations, is pursued. The lectures and the laboratory courses are given contemporaneously as far as possible, for it is believed that the student, in this way, not only acquires technical skill, but a more thorough knowledge of the subject.

When advisable the classes are divided into small sections so that the work of the student is under the direct supervision and close observation of the instructor. Frequent oral and written quizzes and a final examination are required in each subject, and in the laboratory courses each student is required to record the observations in a note book, which must be submitted from time to time to the instructor and is held for a part of the final grade.

Regular attendance upon all classes is required of each student. A student who is absent twenty per cent. of the total number of hours assigned each subject, or is charged with ten percent. of unexcused absences, is denied the privilege of an examination in the subject in which the absences occur.

EQUIPMENT

At a meeting of the Executive Committee of the Board of Trustees held at Raleigh in March, 1911, an appropriation of $50,000 was made for the erection and equipment of a new medical building. This building, which bears the name of Caldwell Hall, is now completed.

The new building is located on the south side of Cameron avenue opposite Davie Hall, facing north. The front wall of

the main building is on a line with the rear of the Carr building. This location secures the north light in all of the laboratories used for microscopic work.

To the north is the main building, 117x64, and adjoining this, to the south, is a wing, 63x36, each containing a basement and two floors. The first floor of the main building is bisected from north to south by an entrance hall 14 feet wide, and from east to west by a corridor 8 feet wide, dividing the floor space into four equal parts. Each part is subdivided into one large class laboratory, 34x27, and two private laboratories, 14x12½. The class laboratories lie next to the entrance hall. Those on the north side will be used for microscopic work in Histology and Embryology. They are lighted from five large windows on the north side. On the south side are the laboratories for Physiological Chemistry and Experimental Physiology.

The private laboratories are located on the farther side of the class laboratories. The corner laboratories, with two large double windows, will be occupied by the instructors. The private laboratory adjoining the corridor will be occupied by the assistants. The office of the Dean is in one of the private laboratories on this floor and may be entered from the west end of the corridor.

The second floor is a duplicate of the first floor with the exception that the space above the entrance hall is enclosed and is used for the Departmental Library. On the north side are the Bacteriological and Pathological laboratories, and on the south side the Pharmacological laboratory and a lecture room. The laboratories here have the same arrangement as those on the first floor. Nearly opposite the Pathological laboratory is the Pathological Museum.

At the ends of the corridor on the first and second floors are small fire proof rooms which will be used for incubators, thermostats, and other purposes requiring the continuous use of oil or gas lamps.

In the basement of the main building provision is made for the care of animals. The floors of the several apartments are covered with cement and are inclined to a common drain pipe. The rooms are well ventilated, lighted, and heated, and are provided with all necessary facilities for proper sanitation.

On the first floor of the wing adjoining the main building is the main lecture hall, and in the rear of this is the amphitheatre for anatomical demonstrations. In the rear of the amphitheatre is the Anatomical Museum.

On the second floor of the wing are the anatomical laboratories. In the centre, and occupying a large part of the floor space, is the main dissecting hall, which has a cement floor and is lighted by six large windows and two skylights. On either side of a short corridor at the front are two private laboratories for special dissections, and at the end of the corridor the two laboratories for the instructors. The latter are entered from the upper hall of the main building. In the rear of the main dissecting hall are the lavatory and locker rooms.

The basement of the wing is divided by a solid brick wall from east to west. On the north of this wall are the store rooms, a photographic room, a room for the refrigerating and gas plants; on the south side are the storage tanks for cadavers, the incinerator, and other arrangements for the care of anatomical material. In the rear end of the basement is an entrance hall containing the elevator and the stairs leading to the amphitheatre and the dissecting hall. The building is heated from the central heating plant and abundantly supplied with water and electric light. The dissecting hall is supplied with hot and cold water.

The laboratories are well equipped with apparatus for the use of the students and the research work of the teachers. Animals are available in adequate numbers for all proper experimental work.

The Departmental Library contains approximately three thousand volumes. The more important periodicals pertaining especially to the subjects offered in the course are received regularly and kept on file.

The medical students have free access to the general Library, the Chemical, Physical, and Biological laboratories, which are described in Part Five of the general catalogue.

COURSES OF INSTRUCTION

Chemistry

1. General Descriptive Chemistry: Premedical: the elements are studied in a systematic manner; the laws governing their combination and the compounds resulting are considered with appropriate reference to their occurrence and relationships to medicine. The latter part of the course is taken up with organic chemistry. Texts: McPherson's *Elementary Chemistry;* Remsen's *Organic Chemistry. Both terms, three hours.* Professor HERTY and Messrs. VENABLE and CARTER.
Laboratory fee, $1.25 a term.

3A. Qualitative Analysis: Premedical: laboratory work with lectures; practice is given in the analysis of known and unknown mixtures. Required. *Fall term, three hours.* Professor WHEELER and Mr. HOKE.
Laboratory fee, $7.50.

4A. Quantitative Analysis: Premedical: a brief course in gravimetric methods followed by a more extended course in volumetric methods. Required. *Spring term, two hours.* Associate Professor BELL.
Laboratory fee, $4.00.

5. Organic Chemistry: lectures and laboratory work. Prerequisite, Chemistry 1 and 3. Elective. *Both terms, three hours.* Professor WHEELER.
Laboratory fee, $4.00 a term.

5A. Organic Chemistry: laboratory work only. This course is designed to give further practice in dealing with organic compounds. Elective. Prerequisite, Chemistry 5 or 10. *Both terms, two hours.* Professor WHEELER.
Laboratory fee, $6.00 a term.

9. Toxicology: laboratory work; the chemical behavior of poisons and their separation is studied in the laboratory. Text: Autenrieth and Warren's *Detection of Poisons.* Required. *Spring term after April 1, three hours.* Professor WHEELER and Mr. CONROY.
Laboratory fee, $1.50.

10. Organic Chemistry: lectures and laboratory work. Part I. A general survey of Organic Chemistry and the synthetic preparation of compounds of special interest to medical men.

Part II. A more detailed study of the fats, carbohydrates, and proteins, including laboratory work. Text Haskin's and Macleod's *Organic Chemistry. Fall term and Spring term to April, three hours.* Professor WHEELER and Mr. CONROY.

Laboratory fee, $5.00 a term, including Chemistry 9.

Physics

A. Elementary Physics: the fundamental facts of Physics are studied with some special attention to heat and electricity. Text-book, lectures, and laboratory work. *Both terms, three hours.* Mr. CHRISLER.

Certificates of Physics work done elsewhere than in a college of approved standing will not be accepted in lieu of this course.

4. Electricity and Magnetism: a study of the phenomena of electricity and magnetism, and their application in modern life, including the use of the X-rays, the rays of Radium and other applications in Electrotherapeutics. Laboratory work required. Elective. *Both terms, two hours.* Professor PATTERSON.

Laboratory fee, $2.00 a term.

Zoology

1. Elements of Zoology; premedical; an introductory course giving an outline of the classification and structure of animals, fundamentals of histology, embryology, and physiology, with some consideration of biological theories; lectures with laboratory work. Text: Parker. Professor WILSON and Mr. GEORGE.

Laboratory fee, $3.00 a term.

2. Comparative Anatomy of Vertebrates (first half); medical; dissection of vertebrate types: ascidian, amphioxus, cyclostome, fish, bird, mammal. Text: Kingsley. Professor WILSON and Mr. BROWNSON.

Laboratory fee, $5.00.

Botany

1. General Botany: an introduction to the structure and classification of plants; lectures with laboratory work. Elective in the first year. Professor COKER and Mr. COBB.

Histology

1. General Histology and Organology. This course includes (*a*) the study of the fundamental tissues followed by (*b*) the study of the microscopic structure of the various organs, and (*c*) the fundamentals of histological technique. Fall term. Lectures, recitations, and laboratory. *Nine hours a week.* Professor BROWN, Messrs. TOLAR and SIMMONS.

2. Advanced Histology: To those who have completed course 1 or its equivalent, opportunity will be offered to pursue advanced work or original investigation in this subject. Arrangements for this course may be made with Professor BROWN.

Course 1 is required of all medical students. Course 2 is elective.

Anatomy

Professor MANGUM, Associate Professor LAWSON, and Mr. ROBERTS.

The method of instruction is one of dissection and demonstration supplemented by lectures. Each student is required to dissect one-half of the body under the constant supervision of an instructor, who examines him daily upon the work done. Frequent practical examinations are held upon which stress is laid in order to enforce proper study of the cadaver.

1. In the First Year the lectures and demonstrations proceed by systems. The bones, the articulations, the descriptive anatomy and relations of the viscera are demonstrated to each student. During this year the student dissects one-fourth of the body.

2. In the Second Year the student finishes the dissection of the body and especial stress is laid upon topographical anatomy and the relations of anatomy to surgery. A

final examination is held upon the entire subject of gross anatomy.

3. Neuro-Anatomy: special laboratory study of the gross and microscopic anatomy of the cord and encephalon Text: Cunningham, Gray, or Morris; Cunningham's *Manual of Practical Anatomy;* Whitehead's *Anatomy of the Brain.*

4. Vertebrate Embryology: The lectures embrace the phenomena of cell division, ovulation, and impregnation, and the development of the human body to the end of the fœtal stage. In the laboratory the student verifies the facts by the study of organogeny in the chick and in the pig and the fœtal membranes in mammals. Texts: Bailey and Miller; Marshall; Minot's *Laboratory Text.*

Physiology

Professor MANNING and Mr. BELDEN.

The course in Physiology is given in three parts, as follows:

1. General Physiology: a lecture course of five hours a week extending through the year; a brief account of cell physiology is followed by a detailed discussion of the facts and theories of Human Physiology; attention is called to the application of physiology in medical practice as far as possible. Text: Howell.

2. Physiological Chemistry: a laboratory course of six hours a week during the fall term. The purely chemical aspects of Bio-chemistry are considered in the course in organic chemistry (Chem. 10) given in the first year. In the course in Physiological Chemistry a practical application of the principles of Biochemistry is made in the study of Human Physiology. The chemistry of digestion, of the secretions, of blood, and of the urine is studied in detail, qualitatively and quantitatively, and such tissues are examined as will afford evidence of the course of metabolic processes. Laboratory Notes. References: Hammarsten, Hawk.

3. Experimental Physiology: a laboratory course of five hours a week during the spring term. In this course

the student studies the heart and neuro-muscular systems on the turtle and the frog; the circulatory, respiratory, and glandular systems on the mammal. In the former the class is divided into groups of two and in the latter into groups of four. Each group is supplied with mimeographed directions for the performance of each experiment and a full equipment of apparatus, and each student is required to keep a record of the observations, including tracings. Reference: Stewart, Porter, Hill, etc.

Materia Medica and Pharmacology

Professor MacNider and Mr. Greenwood.

1. Materia Medica: the general consideration of this subject is given in the first year of the medical curriculum. In the second year the important drugs are studied in groups, the classification depending upon their physiological action. Emphasis is given to the most important drugs, and their physiological action is studied in detail.

2. Prescription Writing: as early as possible in the course the student's attention is directed to the logical application of various drugs to the relief of morbid conditions. Hypothetical conditions are discussed, and each student writes one or more prescriptions and gives his reasons for the use of the various drugs he employs. The prescriptions are discussed and criticised by the students and the instructor.

3. Pharmacodynamics: this part of the general course in Pharmacology consists in a careful and accurate study of the action of practically all of the more important drugs on the lower animals. For this work, the higher animals, such as the cat and dog, are chiefly used. The class is divided into groups of two or four, and the experimental work is conducted by the students. Each student is required to hand in to the instructor, at the completion of the course, a laboratory note book containing a detailed account of each experiment, an explanation of the results obtained, and the tracings made

during the experiments. Oral and written recitations are frequently held. Text: Cushny. *Pharmacology and Therapeutics.* Reference: Sollman.

4. Advanced Pharmacology: two types of courses will be offered: (*a*) an experimental study of the action of various drugs upon the normal animal; (*b*) an experimental study of the action of various drugs and other agents upon the pathological animal.

Bacteriology

Professor MacNider and Mr. Greenwood.

The student learns by practical experience the methods of cultivating, staining, and identifying the principal pathogenic bacteria. A few non-pathogenic and saprophytic forms are studied. The pathological significance of the various forms is explained by lectures, and the pathogenicity of some of the forms is determined by inoculation experiments performed by the class. At intervals during the course unknown organisms are given for identification. In addition to this, each student is required to isolate from the air, water, fecal matter, or pus two organisms and determine their species. The latter part of the course is devoted to the bacteriological study of milk and water. Text: Jordan. Reference: Park and McFarland.

Minor Surgery and Physical Diagnosis

Associate Professor Lawson.

The class practices the application of bandages, and learns the modern method of dressings wounds. A short course in Physical Diagnosis is given. Text: Davis on Bandaging.

Pharmacy

Professor Howell.

The course in Pharmacy will consist in laboratory work supplemented by lectures. The student will have an opportunity to study the crude drugs and their official

prescriptions and doses, and to familiarize himself with pharmaceutical methods in the preparation of official drugs, in writing and compounding prescriptions.

Hygiene

Professor MANNING.

A short course in the elementary principles of Hygiene and Sanitation.

Pathology

Professor BROWN, Messrs. TOLAR and SIMMONS.

1. General and Special Pathology: this course embraces a thorough consideration of general pathological processes from their chemical and physiological as well as their morphological aspects. The subject of Special Pathology is considered upon the same broad basis. The course includes a series of lectures and recitations combined with laboratory work and demonstrations of gross and microscopical preparations. Second term. Lectures and recitations, *four hours a week;* laboratory, *nine hours a week.* Prerequisite, Histology 1.

2. Advanced Pathology: opportunity for advanced work in pathology or for original investigation will be offered to a limited number of students upon the presentation of satisfactory evidence of ability to pursue work of this character.

Course 1 is required of all medical students. Course 2 may be elected by special arrangement with Professor BROWN.

Advanced Courses for Practicing Physicians

Opportunity for advanced work or for original investigations is offered in all of the laboratories to practicing physicians by special arrangement with the instructors.

SCHEDULE OF RECITATIONS

FIRST YEAR

HOUR TERM	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Fall	Histology	Histology	Histology	Histology	Histology	Histology
8:30						
Spring	Embryology	Anatomy		Anatomy	Embryology	Anatomy
Fall	Histology	Histology	Histology	Histology	Histology	Histology
9:45						
Spring	Embryology	Anatomy	Pharmacy	Anatomy	Embryology	Anatomy
Fall		Histology		Histology	Chem. 10	Histology
10:40						
Spring		Anatomy		Anatomy	Chem. 10	Anatomy
Fall	Anatomy	Anatomy	Anatomy	Anatomy	Chem. 10	
11:35						
Spring		Anatomy		Anatomy	Chem. 10	Anatomy
Fall	Anatomy	Anatomy	Anatomy	Anatomy		
12:30						
Spring		Anatomy		Anatomy		Anatomy
Fall	Chem. 10	Zoology 2	Chem. 10	Zoology 2	Zoology 2	
2:30 4:30						
Spring	Chem. 10	Pharmacy	Chem. 10	Pharmacy		

SECOND YEAR

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Anatomy 2	Anatomy 3	Anatomy 2	Anatomy 3	Anatomy 2	Anatomy 3
Pharma-cology	Pharma-cology	Pharma-cology	Pharma-cology	Pharma-cology	Pathology
Anatomy 2	Anatomy 3	Anatomy 2	Anatomy 3	Anatomy 2	Anatomy 3
Physiology	Physiology	Physiology	Physiology	Physiology	Pathology
Anatomy 2	Bacteriology	Anatomy 2	Bacteriology	Anatomy 2	Bacteriology
Pharma-cology	Pathology	Pathology	Pathology	Physiology	Pathology
		Bacteriology			Bacteriology
Pharma-cology	Pathology	Pathology	Pathology	Physiology	Pathology
Physiology	Physiology	Physiology	Physiology	Physiology	
Pharma-cology	Pathology	Pathology	Pathology	Physiology	
Physiolog. Chem,	Bacteriology	Physiolog. Chem.	Bacteriology	Physiolog. Chem.	
Pharma-cology	Ph. Diagnosis Minor Surg.	Hygiene	Ph. Diagnosis Minor Surg.	Physiology	

School of Pharmacy

FACULTY

Francis Preston Venable, Ph. D., D. Sc., LL. D., President.
Edward Vernon Howell, A. B., Ph. G., Dean.

Edward Vernon Howell, A. B., Ph. G., *Professor of Pharmacy.*

John Grover Beard, Ph. G., *Instructor in Pharmacy.*

Henry Van Peters Wilson, Ph. D., *Professor of Zoology.*

William DeBerniere MacNider, M. D., *Professor of Pharmacology.*

Isaac Hall Manning, M. D., *Professor of Physiology.*

Charles Holmes Herty, Ph. D., *Smith Professor of General and Industrial Chemistry.*

Andrew Henry Patterson, A. M., *Professor of Physics.*

William Chambers Coker, Ph. D., *Professor of Botany.*

Alvin Sawyer Wheeler, Ph. D., *Professor of Organic Chemistry.*

James Munsie Bell, Ph. D., *Associate Professor of Physical Chemistry.*

Charles Scott Venable, A. M., *Instructor in Chemistry.*

Vivian Leroy Chrisler, A. M., *Instructor in Physics.*

Wesley Critz George, A. M., *Instructor in Zoology.*

William Battle Cobb, A. B., *Assistant in Botany.*

Carnie Blake Carter, *Assistant in Chemistry.*

Frank Davies Conroy, *Assistant in Chemistry.*

Clarence Ballew Hoke, *Assistant in Chemistry.*

Jackson Townsend, *Assistant in Chemistry.*

James Blaine Scarborough, *Assistant in Physics.*

Allyn Raymond Brownson, *Assistant in Zoology.*

FOUNDATION

The School of Pharmacy was founded in 1897 and was opened for students in September of that year. Its location at the seat of the University assures to the students the most modern scientific instruction with all the laboratory facilities of the undergraduate department, as well as the courses of instruction in the allied branches. These opportunities will meet the requirements of a large number of students who were compelled heretofore to obtain their pharmaceutical education in other states. Briefly stated, the advantages are as follows:

1. Thorough, careful, *individual* training.
2. The practical experience derived from active work in the laboratories.
3. Intimate association with the other departments of the University, to all of which the student of pharmacy has access, and the daily contact with students pursuing various branches of learning.
4. The use of the large library and reading room and the well equipped gymnasium.
5. The comparatively small cost at which a two years' course may be obtained.
6. The length of the course, which consists of two sessions of nine months each,—nearly a fourth longer than in many of the colleges of pharmacy.

The success of the students of this school in their examinations before the State boards has been very gratifying. Students of this School have been applicants before the State boards of Maryland, Pennsylvania, and North Carolina. None of the graduates of this School applying for license before the State boards has failed to pass the examination.

ADMISSION

Candidates for admission into the School of Pharmacy should present themselves on the same days and at the same hours with candidates for admission into the college. For the next academic year these days will be *Monday, Tuesday,* or *Wednesday, September 8, 9,* or *10, 1913,* and *Friday* or *Satur-*

day, January 2 or *3, 1914.* The session of the School of Pharmacy is of the same length as the College year, beginning *September 11, 1913,* and ending *June 3, 1914.*

Candidates for the degree of Ph. G. must be, on entering, at least 17 years old, and must have completed a high school course of study. They may however enter the first year course without those prerequisites.

The members of the School of Pharmacy enjoy all the privileges extended to other students in the University.

EXPENSES

The charges for each term are payable at the begining of the term. They are as follows:

Tuition	$30.00
Registration and incidental fees	12.50

There are additional fees as follows:

FIRST YEAR.

Chemistry 1 (each term)	$1.25
Physics A (each term)	1.00

SECOND YEAR.

Chemistry 3 (each term)	$5.00
Chemistry 9 (April and May)	1.50

The students of Pharmacy are entitled to the use of the gymnasium, the library, and reading room, and, in case of sickness, to medical attention and the use of the infirmary.

Good board is furnished at Commons Hall for $10.00 a month and at the University Inn for $15.00 a month. The rent of unfurnished rooms ranges from 75 cents to $2.75 a month. For each room is made a charge of $2.00 a month for electric light and heating.

PRIZES

THE BRADHAM PRIZE, offered by Mr. C. D. Bradham, of New Bern, N. C., will be given to the student making the highest general average during the two years of study.

Prizes will be given:

1. For the best thesis.
2. For the best collection of native medicinal herbs.
3. For the best exhibit of chemical salts made by a second year student.
4. For the best work in the recognition of materia medica specimens.
5. To the student recognizing the largest number of pharmaceutical preparations.
6. To the student making the best general average during the first year of study.

EXAMINATIONS

Final examinations are held at the end of each term on the subjects embraced in the course.

Quizzes upon the different branches are held regularly. Specimen quizzes upon Materia Medica, Chemistry, and Pharmacy are held once a week, and consist in the recognition and correct writing of the official names of the specimens presented.

Students are required to make an average of 70 per cent. on all examinations and quizzes.

COURSES LEADING TO THE DEGREE OF GRADUATE OF PHARMACY

In order to be recommended for the degree of Graduate of Pharmacy (Ph. G.) the student must have completed with credit the course of study outlined below. The course extends over two sessions of nine months each. The student must have completed the work of both sessions in the School of Pharmacy of this University, or of one session (the second) here after one in some other recognized school of Pharmacy. He must obtain satisfactory marking in attendance, making a general average of 70 per cent. in the various branches, and submit a satisfactory thesis. The thesis must be an original essay embodying the results of the student's personal research in some branch of Pharmacy, which he has prosecuted under the direction of the professor who assigned him the subject. The subject of such thesis must be announced on or before February 1 to the Dean of the Faculty. On May 2 the thesis

shall be read before the Dean of the School, subject to criticism and correction. The corrected and approved thesis must be handed to the Registrar in typewritten form on or before May 15. It will be published at the discretion of the Dean of the School. He must also have had a practical experience of at least four years with some qualified pharmacist in a dispensing store. Satisfactory evidence on this point must be submitted to the Dean of the School, and a certificate deposited with the Registrar on or before May 15. Students who have not had the full four years' experience will be permitted to stand examinations for graduation; but their diplomas will be withheld until they shall have satisfied this requirement. Of the three years of experience required for license by the State Board of Pharmacy, the work done in the Pharmaceutical laboratory will count for one and only one.

FIRST YEAR.

Pharmacy 1 (5)
Pharmacy 4 (4)
Pharmacy 8 (3)
Pharmaceutical Botany (3) or
Elementary Physics A (3)
Chemistry 1 (3)

SECOND YEAR.

Pharmacy 2 (5)
Pharmacy 5 (8)
Materia Medica (5)
Materia Medica and Pharmacology (5)
Chemistry 3 (2)
Chemistry 9, April and May (3)

COURSES OF INSTRUCTION

Pharmacy

1. Theory and Practice of Pharmacy. This course consists of lectures upon the following subjects, with practical demonstrations and the employment of proper apparatus whenever necessary: metrology, comminution,

heat evaporation, distillation, sublimation; fusion, calcination, granulation, oxidation, reduction, etc.; solution of solids, liquids, and gases; deliquescence, efflorescence, etc.; colation, filtration, decolorization, clarification, precipitation, etc.; macration, expression, infusion, decoction, etc.; percolation, and study of the following: waters, syrups, honeys, glycerites, mucilages, mixtures, spirits, elixirs, liniments, collodians, tinctures, wines, vinegars, and fluid extracts. Text: Remington, *Theory and Practice of Pharmacy*. First year. *Both terms, five hours.* Professor HOWELL.

2. Theory and Practice of Pharmacy: The official forms and preparations of drugs are taken up in detail. Beginning with the inorganic compounds, the salts are considered with regard to their commercial qualities and pharmaceutical uses and preparations. The organic compounds are studied, commencing with the salts of the organic acids and passing to the natural and organic compounds. Second year. *Both terms, five hours.* Professor HOWELL.

3. Pharmaceutical Botany and Materia Medica: This course takes up the study of the medicinal plants. It embraces Organography, Vegetable Histology, Morphology, and Plant Geography. Each plant is studied with reference to the part official in pharmacy, the constituents, action and uses, official preparations and assay of the drug. Instruction is also given in growing native plants and in mounting them for exhibition purposes. *Both terms, three hours.* Text-books: Bastins' *College Botany* and Ruddiman's *Materia Medica*. Mr. BEARD.

4. Operative Pharmacy: a practical course with laboratory work. First year. *Both terms, four hours.* Mr. BEARD.

5. Operative Pharmacy: a continuation of course 4. Second year. *Both terms, two hours.* Professor HOWELL.

Materia Medica and Pharmacology

1. Materia Medica: lectures on the geographical and botanical sources of drugs; descriptions and uses of the same, together with their preparation and doses. Opportunity is given the student to familiarize himself with most of the crude drugs and their preparations. Text: White and Wilcox. *Fall term, three hours.* Mr. BEARD.

2. Materia Medica and Pharmacology: This course is devoted to the study of the origin and constitution of remedial measures, their preparation and doses; and in particular, their physiological action and the indications for their rational use. Opportunity will be given to students to familiarize themselves with the more important crude drugs and their preparations. Instruction is given by means of lectures, recitations, and demonstrations. The lectures intended to accompany the work in Toxicology are given as a part of the course in Materia Medica. Professor MACNIDER.

8. Pharmacy. In this course, which deals with several branches of pharmacy, synonyms are first taken up and all common and practical names of plants and chemicals are studied. Along with synonyms, the specimens commonly seen in drug stores are shown and methods given for the recognition of each. This is followed by a detailed list of all terms descriptive of the therapeutic action of drugs.

A short course is given in pharmaceutical Latin. A student of this course will be taught to read and write correctly prescriptions in full Latin. In addition, instruction is given in the Latin prefixes and suffixes used to form the names of chemicals and galenicals.

The spring term is wholly taken up with a complete course in pharmaceutical arithmetic. Beginning with the metric system, the student is instructed in Alligation, Specific Gravity, Specific Volume, Percentage, Proportion, etc. Text-book: Sturmer's *Pharmaceutical Arithmetic. Both terms, three hours.* Mr. BEARD.

Physics

Elementary Physics (Physics A): the fundamental facts of Physics are studied with some special reference to heat and electricity. Text-book, lectures, and laboratory work. First year. *Both terms, three hours.* Mr. CHRISLER.

Certificates of Physics work done elsewhere than in a college of approved standing will not be accepted in lieu of this course.

Chemistry

1. General Descriptive Chemistry: the elements are studied in a systematic manner; the laws governing their combination, and the compounds resulting, are considered with appropriate reference to their occurrence and relationships to medicine. The latter part of the course is taken up with organic chemistry. Texts: McPherson and Henderson's *Elementary Study of Chemistry,* and Remsen's *Organic Chemistry,* supplemented by lectures and quizzes. First year. *Both terms; lectures, three hours; laboratory, one hour.* Professor HERTY and Messrs. VENABLE and CARTER.

3. Qualitative Analysis: laboratory work with lectures; the behavior of the elements and their compounds is studied in the laboratory. Practice is given in the analysis of known and unknown mixtures with special reference to the detection of poisons and determination of the purity of drugs. Second year. *Both terms, two hours.* Professor WHEELER and Mr. HOKE.

9. Toxicology: laboratory work: the chemical alkaloids of poisons and their separations are studied in the laboratory. Text, Autenrieth and Warren's *Detection of Poisons. April and May, three hours.* Professor WHEELER and Mr. CONROY.

Laboratory fee, $1.50.

OPTIONAL COURSES

The following courses are not required of students in Pharmacy, but may be elected profitably.

Elementary Physiology

The study of Physiology is begun in the spring term of the first year, during which the physiology of digestion, the digestive glands, blood, respiration, metabolism, excretion, and animal heat are considered in lectures illustrated by experiments. The study is continued in the fall term of the second year by consideration of the physiology of the muscles and of the nervous system. During this term also the student learns the methods of experimental physiology by means of class work in the laboratory. Texts: *American Text Book,* Stewart, or Kirke. *Both terms, three hours.* Professor MacNider.

Zoology

Elements of Zoology: an introductory course giving an outline of the classification and structure of animals, fundamentals of histology, embryology, and physiology, with some consideration of biological theories; lectures with laboratory work. Text: Parker. *Both terms, three hours.* Professor Wilson and Mr. George.

Botany

General Introduction to Systematic Botany: with special attention to medical plants; laboratory and field work, with recitations. *Spring term, three hours.* Professor Coker and Mr. Cobb.

Chemistry

Industrial Chemistry: lectures; the application of chemistry to the arts and industries. This course includes metallurgy, glass making, pottery, *(fall term);* food, clothing, building materials, explosives, photography, etc., *(spring term). Both terms, three hours.* Professor Herty.

Quantitative Analysis: laboratory work. This course is intended to give the student a thorough grounding in analytical methods and manipulations. *Three hours.* Associate Professor Bell.

Quantitative Analysis: laboratory work. The student in this course is led further into the study and practice of analytical methods. The work may take any special direction desired by him, fitting him to be an agricultural chemist, iron chemist, manufacturing chemist, physician, druggist, or teacher of chemistry. The spring term is given to research. *Five hours.* Professor HERTY.

Determinative Mineralogy: lectures with laboratory work. Dana's *Text-Book of Mineralogy. Both terms, two hours.* Mr. SMITH.

Bacteriology

The student learns by practical experience the methods of cultivating, staining, and identifying the principal bacteria, and their pathological significance is explained by lectures and demonstrations by inoculation of animals. In this way the chief pathogenic bacteria are studied in pure culture on the various media, after which the methods of obtaining pure culture from mixtures of bacteria are learned. The necessary manipulations are carried out by the students, who thus obtain a practical knowledge of the subject which can be gained in no other way. *Fall term, six hours.* Professor MACNIDER.

Students in Pharmacy have also the privilege of attending any of the regular academic courses.

PHARMACEUTICAL LABORATORY

OFFICERS.

EDWARD VERNON HOWELL, A. B., Ph. G., DIRECTOR and *Professor of Pharmacy.*

JOHN GROVER BEARD, Ph. G., *Instructor in the Pharmaceutical Laboratory.*

The rooms of the Pharmaceutical Laboratory are admirably adapted to this purpose. They are conveniently situated on the first floor, are well lighted, and well equipped with water,

electric lights, and gas. To each student is assigned a desk, provided with lock and key, and containing all the apparatus necessary for the every day work of the pharmacist. In the store room is kept a supply of materials for practical work, as well as the apparatus for the more complex operations. Ample space is provided for the work at the prescription counter, where practical instruction in the compounding and dispensing of prescriptions is given.

A small deposit fee is required to cover the cost of breakage of apparatus. At the end of the session this fee will be returned, less the amount of breakage.

OTHER LABORATORIES

The laboratories of Physics, Chemistry, and Biology are open to students in Pharmacy. These laboratories are all equipped with the most approved apparatus for experimentation and illustration.

READING ROOM AND LIBRARY

The School of Pharmacy is provided with a well selected library and with a reading room, inaugurated by the class of 1897, in which are filed a large number of medical and pharmaceutical journals.

In addition to these advantages, students of this department enjoy the privileges of the University reading room, in which are filed all the leading newspapers and magazines, and free access to the University Library, which numbers sixty-five thousand volumes and eighteen thousand pamphlets.